



UNIVERSITI PUTRA MALAYSIA

**INTERNATIONAL RESERVES, CURRENT ACCOUNT IMBALANCE
AND EXTERNAL DEBT IN EAST ASIAN ECONOMIES**

ELIZA NOR

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**INTERNATIONAL RESERVES, CURRENT ACCOUNT IMBALANCE
AND EXTERNAL DEBT IN EAST ASIAN ECONOMIES**

By

ELIZA NOR

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

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**INTERNATIONAL RESERVES, CURRENT ACCOUNT IMBALANCE
AND EXTERNAL DEBT IN EAST ASIAN ECONOMIES**

By

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March 2009

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Faculty: Economics and Management

This study investigates the impact of current account imbalance and external debt on international reserve holdings in nine East Asian economies, namely China, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand (henceforth East Asia). These countries are further divided into four groups: East Asia, ASEAN5, ASEAN4, and the non-ASEAN countries. After the 1997-98 East Asian financial crisis, these countries had increased their reserve holdings and the current accounts in majority of these countries had experienced consistent surpluses at least until 2005. Besides, most of these countries had also increased their external debt holdings in recent years. The autoregressive distributed lag (ARDL) approach, panel cointegration, and panel fully modified ordinary least squares (FMOLS) were utilized to examine the relationship between international reserve holdings and its determinants. The study covers the period from 1970 to 2005. There are three

important conclusions can be derived from the empirical findings. First, current account balance has a positive and significant relationship with international reserve holdings in Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan, East Asia, ASEAN5, ASEAN4, and non-ASEAN countries. The positive relationship indicates that the rise in the current account surplus leads to the rise in international reserve holdings in these countries. Second, total external debt is a substitute for international reserves in China, Japan, Korea, the Philippines, East Asia, ASEAN5, and ASEAN4. Third, short term external debt acts as a substitute for international reserves in Korea, the Philippines, Thailand, ASEAN5, and ASEAN4. The role of external debt as substitute for international reserves implies that external debt is used to finance international transactions. However, in China, Singapore, and the non-ASEAN countries, short term external debt acts as a complement for international reserves. In other words, these countries increased reserves as their precautionary measure against short term capital flow reversals during the crisis. High international reserve holdings and current account surplus are associated with the savings-investment imbalance in East Asia. The imbalance is due to the limited ability of the private sector to transform its savings into investment. The development in the regional capital markets may assist the private sector to circulate its savings within the region and minimize its dependence on external financing.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**REZAB ANTARABANGSA, KETIDAKSEIMBANGAN AKAUN SEMASA
DAN PINJAMAN LUAR NEGARA DI NEGARA-NEGARA ASIA TIMUR**

Oleh

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Kajian ini menguji kesan ketidakseimbangan akaun semasa dan pinjaman luar negara ke atas pegangan rezab antarabangsa di sembilan negara Asia Timur iaitu China, Indonesia, Jepun, Korea, Malaysia, Filipina, Singapura, Taiwan, dan Thailand (kemudiannya disebut Asia Timur). Negara-negara ini seterusnya dibahagikan kepada empat kumpulan berikut: Asia Timur, ASEAN5, ASEAN4 dan negara-negara bukan ASEAN. Selepas krisis kewangan Asia Timur pada tahun 1997-98, kebanyakan negara-negara ini telah meningkatkan pegangan rezab antarabangsa dan akaun semasa di kebanyakan negara-negara ini mengalami lebihan yang berterusan sekurang-kurangnya sehingga tahun 2005. Kebanyakan negara-negara ini juga telah meningkatkan pinjaman luar negara pada tahun-tahun kebelakangan ini. Autoregressive distributed lag (ARDL), panel cointegration, dan panel fully modified ordinary least squares (FMOLS) digunakan untuk mengkaji hubungan di

antara pegangan rezab antarabangsa dan penentunya. Kajian ini merangkumi tahun 1970 hingga 2005. Tiga kesimpulan penting dapat dibuat daripada keputusan empirikal kajian ini. Pertama, baki akaun semasa mempunyai hubungan positif dan signifikan dengan pegangan rezab antarabangsa di Indonesia, Jepun, Korea, Malaysia, Singapura, Taiwan, Asia Timur, ASEAN5, ASEAN4 dan negara-negara bukan ASEAN. Hubungan positif ini menunjukkan bahawa peningkatan lebihan akaun semasa menyebabkan peningkatan pegangan rezab antarabangsa di negara-negara ini. Kedua, jumlah pinjaman luar negara adalah pengganti kepada rezab antarabangsa di China, Jepun, Korea, Filipina, Asia Timur, ASEAN5 dan ASEAN4. Ketiga, pinjaman jangka pendek luar negara adalah pengganti kepada rezab antarabangsa di Korea, Filipina, Thailand, ASEAN5 dan ASEAN4. Fungsi pinjaman luar negara sebagai pengganti kepada rezab antarabangsa menunjukkan bahawa pinjaman luar negara digunakan untuk membiayai transaksi antarabangsa. Walaubagaimanapun, pinjaman jangka pendek luar negara adalah penggenap kepada rezab antarabangsa di China, Singapura dan negara-negara bukan ASEAN. Dengan perkataan lain, negara-negara ini meningkatkan rezab sebagai langkah berjaga-jaga terhadap kemungkinan aliran keluar dana jangka pendek ketika krisis. Peningkatan pegangan rezab antarabangsa dan lebihan akaun semasa dikaitkan dengan ketidakseimbangan di antara simpanan dan pelaburan di Asia Timur. Ketidakseimbangan ini adalah disebabkan oleh kebolehan yang terhad sektor swasta untuk mengubah simpanan mereka kepada pelaburan. Pembangunan pasaran kewangan di rantau ini dapat membantu sektor swasta untuk mengedarkan simpanan

mereka di rantau ini dan mengurangkan pergantungan mereka terhadap pinjaman luar negara.

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I certify that a Thesis Examination Committee has met on 31 March 2009 to conduct the final examination of Eliza binti Nor on her thesis entitled "International Reserves, Current Account Imbalance and External Debt in East Asian Economies" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.



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LIST OF ABBREVIATIONS/GLOSSARY OF TERMS

| | |
|-------|---|
| ADB | Asian Development Bank |
| ADF | Augmented Dickey Fuller |
| ARDL | Autoregressive Distributed Lag |
| ASEAN | Association of South East Asian Nations |
| BOP | Balance of Payments |
| CA | Current Account Balance |
| DC | Developed Countries |
| DF | Dickey Fuller |
| DOLS | Dynamic Ordinary Least Squares |
| DV | Dependent Variable |
| ECB | European Central Bank |
| ECM | Error Correction Model |
| EXTD | Total External Debt |
| FDI | Foreign Direct Investment |
| FMOLS | Fully Modified Ordinary Least Squares |
| GARCH | Generalized Autoregressive Conditional Heteroskedasticity |
| GDP | Gross Domestic Product |
| GMM | Generalized Method of Moment |
| IFS | International Financial Statistics |
| IMF | International Monetary Fund |
| IPS | Im, Pesaran, and Shin |

| | |
|------|---|
| IR | International Reserves |
| KPSS | Kwiatkowski, Phillips, Schmidt, and Shin |
| LDC | Less Developed Countries |
| LLC | Levin, Lin, and Chu |
| LSDV | Least Squares Dummy Variable |
| MAS | Monetary Authority of Singapore |
| MPI | Marginal Propensity to Import |
| M2 | Broad Money |
| OECD | Organization for Economic Cooperation and Development |
| OLS | Ordinary Least Squares |
| PIM | Propensity to Import |
| STD | Short Term External Debt |
| TOT | Terms of Trade |
| UECM | Unrestricted Error Correction Model |
| UK | United Kingdom |
| US | United States |
| VECM | Vector Error Correction Model |
| WDI | World Development Indicators |
| XPV | Export Volatility |
| YC | GDP per capita |
| 2SLS | Two Stage Least Squares |

CHAPTER 1

INTRODUCTION

1.1 Preface

Emerging market economies have been holding high level of international reserves since the 1997 East Asian financial crisis. Among the Asian countries, China, Japan, Hong Kong, Korea, Taiwan, and Singapore are ranked among the top reserve holders. Even though reserves can provide liquidity and returns, there are several implications associated with high reserve holding. High reserves in emerging markets in recent years reflect the prudence in their economic policies, high growth prospect, and surplus in their trade accounts. At the same time, high reserves are associated with the global external payments imbalances (World Bank, 2005).

Countries can increase their reserve holdings through the surpluses in their current and capital accounts; and from external borrowings. Since reserves are denominated in foreign currencies, holding reserves means that the domestic country is financing the economic development of other countries. Holding reserves is like holding foreign government securities. Countries that hold excessive amount of reserves have to take the risk of the depreciation of the currency in which the reserves are denominated. The higher the amount of reserves held in a certain currency, the higher the risk of capital losses if the currency depreciates (Williams, 2006).

1.1.1 Background and Importance of International Reserve Holdings

The basic concept on the theory of international reserve holdings is based on the precautionary motive of holding reserves. A country tries to balance the cost of adjustment due to reserve depletion and the opportunity cost of holding the reserves (Edison, 2003). Traditionally, there are two motives for holding reserves: transactions and precautionary. Transaction motives include: (1) to provide liquidity to the country; (2) to provide returns on investment; and (3) to pursue export-led growth strategy. Precautionary motives are as follows: (1) to finance balance of payments deficits; (2) to lower the impact of external shocks due to abrupt capital flow reversals; (3) to intervene in the foreign exchange market (to manage exchange rate); and (4) to overcome speculative attacks on currency (Roger, 1993; IMF, 2003; Nugee, 2000; Scobie & Cagliesi, 2000; Higgins & Klitgaard, 2004; World Bank, 2005; International Relations Committee Task Force, 2006).

Besides the two motives listed above, Wang (2006) added another motive for reserve holding-the development oriented motive. This motive include (1) to increase public confidence; (2) to improve international credibility; (3) to improve credit ratings so that countries can reduce the costs of external borrowing; and (4) to reduce the risk of change.